In the Specification:

On page 1 before the first paragraph, please delete the following:

~~Description~~

Please amend the title as follows:

METHOD FOR CONTACTLESS DATA TRANSMISSION AND TRANSPONDER FOR A CONTACTLESS DATA TRANSMISSION SYSTEM

On page 1 before the first paragraph, has been amended to include the following insert:

CLAIM FOR PRIORITY

This application claims priority to International Application No. PCT/EP00/00242 which was published in the German language on January 13, 2000.

TECHNICAL FIELD OF THE INVENTION

Please replace the paragraph beginning on line 6 of page 1 with the following rewritten paragraph:

The present invention relates to a method for contactless data transmission, and in particular, to contactless data transmission between a transponder and a read/write station.

On page 1, between lines 9 and 10 have amended to include the following heading:

BACKGROUND OF THE INVENTION

Please replace the paragraph beginning on line 10 of page 1 with the following rewritten paragraph:

Data transmission between a transponder, such as a smart card, and a read/write station already has existing standards, such as ISO 14443, some of which are still being worked on. These standards regulate, among other things, the modulation type for the RF signals transmitted between the card and the read/write station, the carrier frequency for said RF signals and the coding of the transmitted data.

On page 3, between lines 8 and 9 has been amended to include the following:

SUMMARY OF THE INVENTION

In one embodiment of the invention, there is a method for contactless data transmission. The method includes, for example, receiving a modulated RF signal at a reception unit; processing one of at least two differently modulated and coded RF signals using a signal processor unit to provide a supply voltage and a data signal produced from the modulated RF signal; and supplying the data signal to a data processing unit to the supply voltage configured for connection and to the signal processing unit to set at least one of the modulation type and coding type for the RF signals to be processed, the signal processing unit configured to process at least one of differently modulated and coded RF signals in chronological order, starting from application of a supply voltage until the data processing unit identifies reception of a prescribed data signal.

In one aspect of the invention, a signal processing unit configured to process ASK10% modulated signals and ASK100% modulated signals.

In another aspect of the invention, a supply voltage is applied to the data processing unit, the signal processing unit is first set to the process ASK100% modulated signals.

In still another aspect of the invention, a prescribed data signal is a Request signal transmitted by a read/write unit at predetermined time intervals.

In yet another aspect of the invention, a signal processing unit is set to at least one of a modulation and coding type for respective prescribed time periods until the prescribed signal is detected, the time period being longer than the time interval between two Request signals.

In another aspect of the invention, a supply voltage is applied to the data processing unit, a counter begins to run from a defined start count, and the signal processing unit is set to at least one of another modulation type and coding type if the prescribed signal has not been identified when an end count is reached.

In still another aspect of the invention, a signal processing unit is cyclically set to at least one of different modulation types and coding types.

In yet another aspect of the invention, the modulation type and coding type are set by controlling demodulation and decoding units and voltage regulators in the signal processing unit.

In still another aspect of the invention, a software stored in the data processing unit controls the method.

In one embodiment of the invention, there is a transponder for a contactless inductive data transmission system. The system includes, for example, a reception unit to receive a modulated RF signal; a signal processing unit which is connected downstream of the reception unit and has a first output terminal pair to provide a supply voltage and has at least one second output terminal to provide a data signal obtained from the modulated RF signal, the signal processing unit having a device to process at least one of two differently modulated and coded RF signals; and a data processing unit which is connected to the output terminal pair of the signal processing unit and to which the data signal can be supplied, and having at least one first output terminal which is connected to the signal processing unit to set at least one of the modulation type and coding type for the signals to be processed.

In one aspect of the invention, the data processing unit has a counter, and the signal processing unit is configured to be controlled on the basis of the count.

In another aspect of the invention, the signal processing unit is configured to be controlled on the basis of detection of a prescribed data signal in the data processing unit.

In still another aspect of the invention, the prescribed data signal is a Request signal transmitted by a transmission unit to commence communication with the transponder.

In yet another aspect of the invention, the reception unit has an input resonant circuit and a rectifier.

In another aspect of the invention, the signal processing unit has a first and a second voltage regulator to provide the supply voltage, and a first and a second demodulation and decoding unit to provide the data signal.

In still another aspect of the invention, the first voltage regulator is designed to process modulated energy signals having a first degree of modulation, and the second voltage regulator is designed to process modulated energy signals having a second degree of modulation.

In yet another aspect of the invention, the first demodulation and decoding unit is designed to process modulated energy signals having a first degree of modulation, and the second demodulation and decoding unit is designed to process modulated energy signals having a second degree of modulation.

In another aspect of the invention, the modulation of the energy signals is ASK modulation, and the first degree of modulation is 100% and the second degree of modulation is less than 100%.

In another aspect of the invention, the first and second demodulation and decoding units are configured to be controlled via output terminals of the data processing unit.

In yet another aspect of the invention, the data processing unit has a microprocessor with a memory in which a program is stored.

In still another aspect of the invention, the memory is a ROM or EEPROM.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is explained in more detail below with the aid of exemplary embodiments in figures, in which:

Figure 1 shows a block diagram of the inventive transponder for carrying out the inventive method.

Figure 2 shows a block diagram of the inventive transponder with an illustration of the schematic design of the signal processing unit.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please replace the paragraph beginning on line 10 of page 3 with the following rewritten paragraph:

The present invention provides an improved contactless transmission method in which a transponder is capable of processing differently modulated and/or coded RF signals, in particular ASK100% and ASK10% modulated signals, so that the aforementioned drawbacks, in particular, do not arise.

Please delete lines 17-18 of page 3.

Please replace the paragraph beginning on line 20 of page 3 with the following rewritten paragraph:

In accordance with one embodiment of the inventiont , a transponder is provided which has the following features: a reception unit for receiving a modulated RF signal, and a signal processing unit which is connected downstream of the reception unit and has means for processing at least two differently modulated and/or coded RF signals, with a supply voltage being available on a first output terminal pair, and a data signal obtained from the RF signal being available on a second output terminal. According to the embodiment, a data processing unit is connected to the output terminal pair of the signal processing unit in order to supply voltage. In addition, the data processing unit is connected by an output terminal to the signal

processing unit in order to control the latter and to set it to process differently modulated and/or coded RF signals.

Please replace the paragraph beginning on line 37 of page 3 with the following rewritten paragraph:

As the supply voltage builds up, the data processing unit initially includes no information regarding the manner in which the RF signal which builds up the supply voltage is modulated and/or coded. For this purpose, when an RF signal is received and a supply voltage starts to build up on the data processing unit, the data processing unit is used to set the signal processing unit at preferably cyclical time intervals to the process differently modulated and/or coded RF signals until the data processing unit records the reception of a prescribed data signal. Reception of this prescribed data signal, which is preferably a Request signal agreed between the read/write station and the transponder, indicates to the data processing unit that the processing mode currently set on the signal processing unit is correct.

Please delete lines 17-18 of page 4.

Please replace the paragraph beginning on line 20 of page 4 with the following rewritten paragraph:

In one embodiment of the invention, the signal processing unit can be set to the process ASK10% modulated and ASK100% modulated signals, and the signal processing unit is first set to the process ASK100% modulated signals when a supply voltage is present. The signal processing unit preferably has dedicated a circuit unit, in particular demodulation and decoding units and voltage regulators, for each modulation and/or coding type for the RF signals to be processed. In this context, the signal processing unit is set to one of these modulation and/or coding types preferably by connecting the circuit unit which are required and disconnecting the circuit unit which are not required. The voltage regulator for ASK100% modulated signals is

also capable of producing a supply voltage from an ASK10% modulated signal. The initial setting to the process ASK100% modulated signals thus ensures that the voltage supply to the data processing unit is also ensured when an ASK10% modulated RF signal is received. If a valid data signal is not identified by the data processing unit within a prescribed time, it is assumed that the received RF signal is an ASK10% modulated signal, and the signal processing unit is changed over to the process these signals.

Please delete lines 13-24 of page 6.

Please replace the paragraph beginning on line 32 of page 7 with the following rewritten paragraph:

In this context, the first voltage regulator SR1 is used to provide the supply voltage Uv from a signal modulated in a first manner, in particular from an ASK100% modulated signal, and the second voltage regulator is used to provide the supply voltage from a signal modulated in a second manner, in particular from an ASK10% modulated signal. The voltage regulators SR1, SR2 can be controlled, in particular connected and disconnected, via output terminals AK61, AK62 of the data processing unit DVE. In this case, preferably the voltage regulator SR1; SR2 which is suitable for processing the RF signal to be received is active.

Please replace the paragraph beginning on line 18 of page 9 with the following rewritten paragraph:

If the transponder is placed into the transmission range of a read/write station transmitting RF signals and an RF signal is received by the receiver, a supply voltage starts to build up between the output terminals AK3, AK4 of the signal processing unit. In this case, one or both voltage regulators SR1, SR2 can be active. When a supply voltage Uv is applied to the data processing unit DVE, the latter is activated and controls the signal processing unit SVE such that an RF signal modulated and/or coded in one manner can be processed. This is preferably

done by disconnecting the voltage regulator SR1; SR2 and the demodulation and decoding unit DEM1; DEM2, which are not required for processing the expected signal. In this case, the signal processing unit is preferably first set to process an ASK100% modulated RF signal by activating the first voltage regulator SR1 and the first demodulation and decoding unit DEM1. The first voltage regulator SR1, which is designed for processing ASK100% modulated signals, is also capable of making a supply voltage available from an ASK10% modulated signal, so that the supply voltage for the data processing unit DVE is also ensured if an ASK10% modulated signal is received while the signal processing unit is set to process ASK100% modulated signals. However, the demodulation and decoding units DEM1, DEM2 are not designed to process RF signals of the respective other modulation and/or coding type.

Please replace the paragraph beginning on line 34 of page 10 with the following rewritten paragraph:

In this context, the number of possible modulation and/or coding types for the RF signals which can be processed using the inventive transponder and the inventive method is in no way limited to two. Instead, the signal processing unit may include a circuit unit, in particular voltage regulators and demodulation and decoding units, for a multiplicity of differently modulated and/or coded RF signals.

Please replace the paragraph beginning on line 5 of page 11 with the following rewritten paragraph:

The data processing unit DVE is, in particular, in the form of a microprocessor whose program is stored in a ROM or EEPROM. The transponder can thus be configured for various purposes with an identical hardware design, in particular with an identical design for the signal processing unit SVE. If, by way of example, the transponder is intended to start communicating with a read/write station when an ASK10% modulated RF signal is received, it is possible to use pure software measures to prevent ASK100% modulated signals from being processed. This

embodiment additionally affords the advantage that the way in which the transponder works can be changed at a later time by means of a pure software change, which keeps down the cost and time involvement.

Please replace the paragraph beginning on line 21 of page 11 with the following rewritten paragraph:

The data processing unit DVE preferably includes a comparator for comparing the data signal DS, DS1, DS2 with a desired signal. When a supply voltage Uv is applied to the data processing unit, the counter is set to a start count and is started. If, by the time an end count is reached, the comparator has not delivered a result such that a desired signal corresponding to an expected valid data signal has been received, the signal processing unit is changed over and the counter is set to the start count again. In this case, the signal processing unit SVE is preferably changed over cyclically until the comparator indicates reception of a valid signal.

On page 12, line 1, please replace "Patent Claims" with --WHAT IS CLAIMED IS--.